controlled by another operator, a more conservative approach needs to be taken to the analysis in order to provide adequate protection and not coverage. The free-space model provides the necessary conservatism.

The FCC has long recognized the need to use a free-space model for predicting interference in other similar fixed services. Parts 21 and 74 of the Commission's rules deal with MDS and ITFS services just above and below the WCS frequencies. In calculating interference, a free-space model is used with the addition of a reflection and multiple diffraction component caused by terrain blockage, not clutter data. Likewise, part 101 of the Commission's rules specifies methodologies for interference protection of point-to-point microwave links across multiple bands. Part 101 references TIA Bulletin TSB 10-F as the guide for determining interference calculation and protection. TSB 10-F recommends using free-space calculations where elevation and separation distances result in LOS conditions.

Because of the potentially wide range of WCS receive antenna heights and the ability to locate WCS receive sites anywhere throughout a licensed coverage area, a conservative approach to interference protection must be developed. The only method with sufficient conservatism to protect a WCS licensee's ability to provide service throughout his coverage area is the free-space model.

Overload Interference Area

The size of the area around each SDARS repeater where a BellSouth receiver could receive overload interference is potentially large. There are two equipment vendors under evaluation by BellSouth for use in the WCS band. The overload points for each of the vendor's current products is –27 and –35 dBm respectively. These specifications are at the input to the WCS receiver. A typical WCS installation will utilize an antenna gain of 18 dBi. The required separation distance between an SDARS terrestrial repeater and a WCS receiver for interference protection can now be calculated. For the –27 dBm receiver, the separation distance would need to be 7.2 miles at 40 kwatts of SDARS power and 1.6 miles for a 2 kwatt SDARS repeater. For the –35 dBm receiver, the required separation distance is 18 miles for 40 kwatts and 4 miles for a 2 kwatt repeater. Obviously the potential for interference is large no matter which power level is chosen for SDARS. However, the size of the area and the magnitude of the interference is significantly reduced when the power is limited to 2 kwatts.

SDARS Service Areas

The SDARS licensees have not submitted sufficient technical analyses justifying their need for the exorbitant power levels being requested. In a recent ex parte filing, AT&T Wireless conducted an analysis of the expected difference in coverage areas between a 2 kwatt and a 40 kwatt SDARS repeater. The analysis utilized the propagation model and software recommended by the SDARS licensees for these types of analyzes. The studies showed conclusively that increasing the power from 2 kwatts to 40 kwatts does not grow the coverage area of the repeaters significantly. In fact, the 2 kwatt design with the addition of only a few more repeaters provided just as effective a coverage area as the 40 kwatt design.

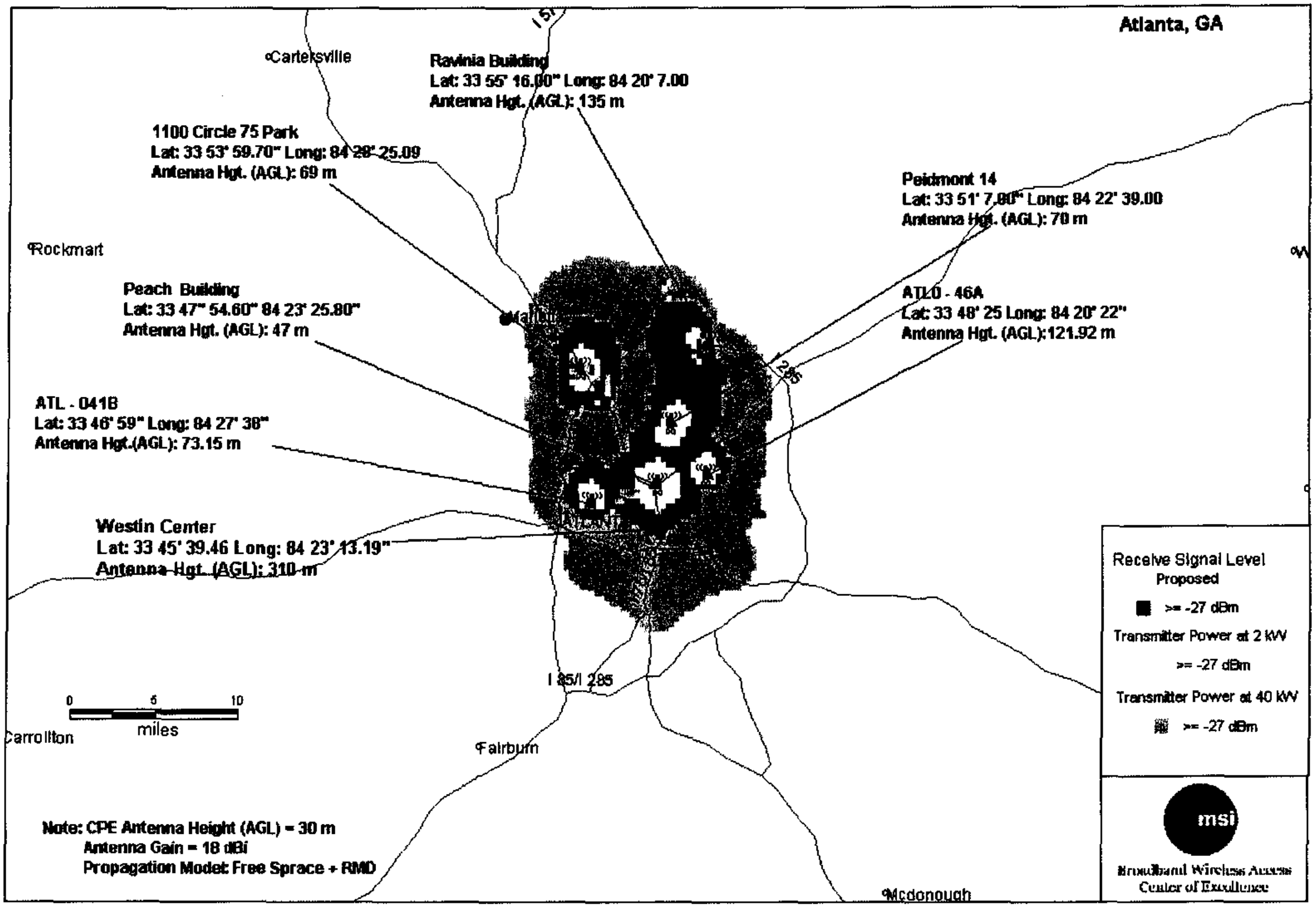
In addition, attached as Exhibit 1 are two studies performed using a similar software package to that utilized by AT&T and the SDARS licensees. These studies are different from the AT&T studies in that (1) the receive antenna height has been increased to 30 meters above ground level, (2) the overload point has been changed to –27 and –35 dBm respectively for the BellSouth chosen equipment, (3) the gain of the receive antenna is 18 dBi and (4) a free-space propagation model has been utilized. This model also incorporates an RMD component (reflection plus multiple diffraction) so that additional attenuation caused by terrain variations will be incorporated. As these studies clearly show, the potential area of overload interference to BellSouth subscriber units covers essential the entire metropolitan area when 40 kW is utilized.

Rules Proposed by SDARS Licensees

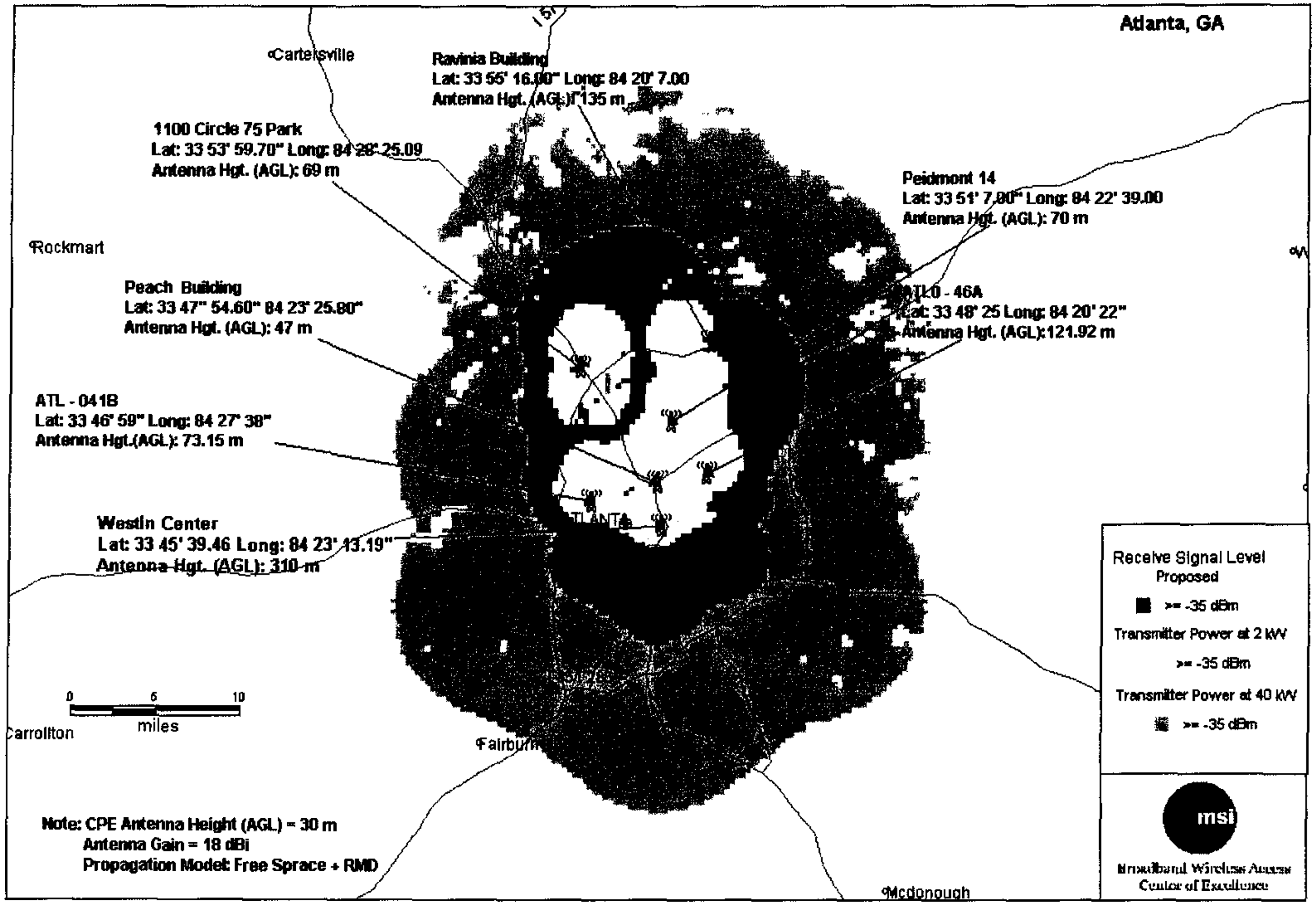
In the latest ex parte submissions by Sirius and XM, the SDARS licensees have proposed certain rule changes in part 25 dealing with terrestrial repeaters. Both licensees have proposed some form of limited coordination between SDARS terrestrial repeaters and WCS base station receivers. However, the issue of WCS subscriber receivers has been totally ignored. The protection of WCS subscriber receivers is the crucial issue as these receivers can be at significantly different heights and a multitude of locations throughout a service area. The probability of a WCS subscriber receiver coming in close proximity to an SDARS repeater is much higher than a WCS base station receiver. There is no way to coordinate an SDARS repeater and the multitude of possible locations for WCS subscriber receivers. The only way to adequately protect WCS subscriber receivers is to provide reasonable power limitations on the SDARS repeaters such that WCS receivers have the ability to reject the interfering carriers with reasonable levels of filtering. This is practical when the SDARS emissions are limited in power to the same levels as other WCS licensees.

Exhibit 1

Receive Signal Level Analysis



Receive Signal Level Analysis



ATTACHMENT E

Letter from John Tehan to Ron Repasi, IB Docket No. 95-91 (Dated March 8, 2001).

ATTACHMENT E

BELLSOUTH

BellSouth Telecommunications Inc.
Room 42U85
675 W. Peachtree Street, N.E.
Atlanta, GA 303075

MEMORANDUM

Date: 3/08/01

To: Ron Repasi
Federal Communications Commission
International Bureau

From: John Tehan
BellSouth Science & Technology
404-330-0376

Re: [IB Docket No. 95-91]

Dear Mr. Repasi:

In a March 1, 2001 meeting convened by International Bureau and Wireless Telecommunications Service Staff, WCS and Satellite DARS licensees were asked to submit additional technical information for staff review In response to this request, BellSouth agreed to submit information about the design of two-way data systems based upon its projected utilization of the WCS spectrum. The data requested concerns the receiver sensitivities of our typical transceiver systems for both base station systems and CPE as well as the typical range of heights at which these units would be installed.

Submitted with this memorandum is a two-page attachment with technical information on the design of our systems based upon the most up to date specifications of two-way data equipment in the MMDS bands. From a technical design perspective, these specifications would have virtually identical components to a comparable WCS system. We also surveyed several vendors to provide filter information of what was realistically feasible for both customer units (typically residential) and base station units. Also provided are the typical heights of our base station and CPE system components.

It is BellSouth's understanding that information from each WCS party attending this March 1st meeting will be collected by yourself and re-distributed to all meeting participants. It is also my understanding that both XM Satellite Radio and Sirius Satellite radio will provide, in return, key system design criteria for their proposed 40 kW systems such as repeater antenna patterns , typical antenna heights, and, if pertinent, filter characteristics of the repeaters.

Finally, it is BellSouth's understanding that the information provided by WCS licensees will be used by the SDARS license holders to conduct interference analyses on specific markets that currently are being evaluated under experimental license and that these analyses (and their accompanying assumptions) will be provided to all meeting participants.

Please direct all questions, regarding technical matters, to me at the number listed above.

EX PARTE OR LATE FILED

BellSouth Attachment - 1

03/08/2001

Subject: Reference BellSouth CPE Receiver Requirements and height requirements.

CPE Receivers

Utilizing feedback from several of our current vendors companies, the typical 1 dB compression point of the LNA is roughly +14 dBm for a single carrier at the output of the second LNA. 64 QAM requires a backoff of 6 dB peak to average and another 10 dB of backoff is required for optimum linearity to avoid non-linear degradation of the desired signal. The block diagram in figure 1 is included for reference.

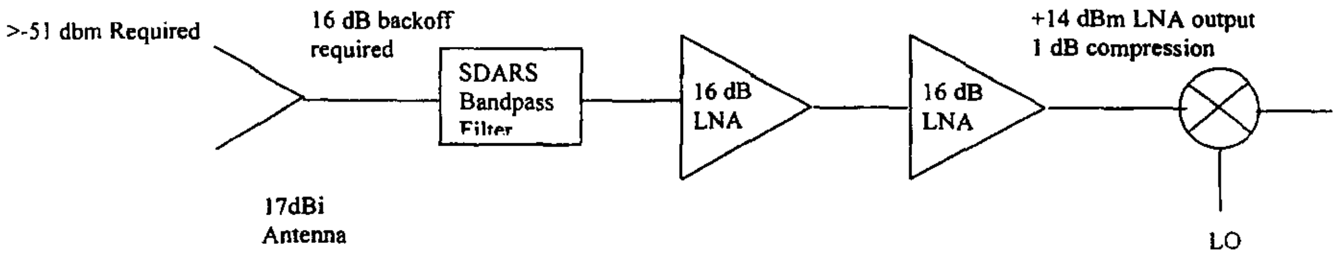


Figure 1 CPE Block Diagram

BellSouth has spoken with several filter and CPE vendors and the filtering achievable in a 4 MHz spacing between 2320 and 2324 MHz is between 0-4 dB. In order to utilize the same CPE for all residences for each of the WCS channels on both sides of SDARS, the RF filtering would be closer to 0 dB.

Max Power at receiver input (at antenna terminal) = +14 dBmW-16dB LNA-16dB LNA –6 dB (64 QAM peak to average power backoff) –10 dB (receiver linearity backoff)= -34 dBmW

Max Power at antenna face = -34dBmW-17dBi = -51 dBmW

It is important to note that the antenna gains can go as high as 24 dBi for residential systems that are in the outer region of our coverage areas.

Max Power at antenna face = -34dBmW-24dBi = -58 dBmW

Base Station Receivers

In order to provide a balanced path link budget, the receiver sensitivities and LNA gains are comparable so BellSouth believes a reasonable estimate for receiver sensitivities for the base station is also –34 dBmW. The typical tranmitter antennas range from 13dBi-16 dBi.

Max Power at antenna face = -34dBmW-16dBi = -50 dBmW

BellSouth does acknowledge that the ability to distribute cost of base stations amongst many customers allows the possible utilization of large, heavy, and high cost (within reason) cavity RF filter's to help mitigate the RF interference caused by SDARS.

Typical CPE Antenna Heights

BellSouth's extensive experience with installation of MMDS (a similar spectral environment) in providing one way digital video indicates that in order to get a clear line-of-sight installation from the residence, the antenna needs to be installed from slightly above rooftop to as high as just above the highest treetop in the residential yard.

Typical CPE Antenna Heights = 30-100 ft

As such, BellSouth believes that a reasonable estimate of the typical residential receiver system is between 30-100 ft. above ground level. It is important to note that terrain varies significantly in many of our markets and often a residence could be several hundred feet higher than ground elevation of the base station or the building where it is mounted.

Typical Base Station Heights

BellSouth plans on utilizing many different base station concepts. In some markets, it is likely that BellSouth will deploy a single base station system. For the same reasons that the SDARS people will place their repeaters at the highest point available in the city, BellSouth may chose to do the same thing. As such, there is no way to predict the heights to which each base station will be deployed. It is therefore our position that without coordination, the signal received from SDARS could easily be from boresight and the rules would need to protect the WCS spectrum holders accordingly.

CERTIFICATE OF SERVICE

I, ANTHONY V. JONES, hereby certify that I have, this 21st day of August, 2001, served the following parties to this action with a copy of the foregoing ***COMMENTS BY BELLSOUTH*** by United States mail, postage prepaid or by hand delivery to the addresses shown below:

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ANTHONY V. JONES

August 21, 2001